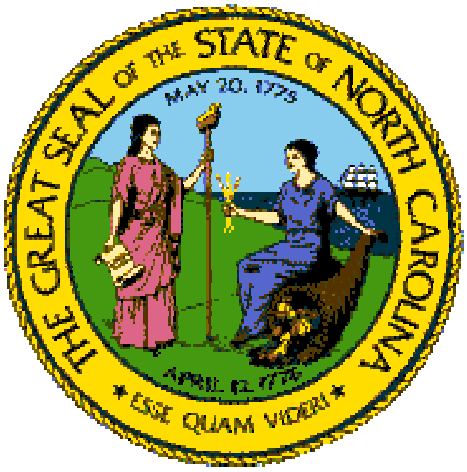

PHASE I State of North Carolina

Business Systems Infrastructure Project

Phase1 – Inventory and Assessment

Executive Summary

April 2003

Deloitte Consulting

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State of North Carolina
Office of the State Controller

Michael F. Easley, Governor

Robert L. Powell, State Controller

April 8, 2003

To: Interested Parties

From: Robert Powell, State Controller
David McCoy, State Budget Officer
Thom Wright, State Personnel Director
George Bakolia, State CIO

Subject: Business Systems Infrastructure Study
Phase 1 (Inventory and Assessment Study)

In January of this year, we announced the kick-off of a joint study to examine the State's core business systems. We are pleased to provide to you the results of Phase I of this study, which covers the inventory and assessment of those core systems that manage the financial and human resources of state government. We want to take this opportunity to thank all of the individuals who assisted with this effort.

The results and findings from Phase I, document that our present core business management systems are chronologically old, technically outdated, difficult to maintain and support, unresponsive to today's data analysis and information reporting requirements, and at risk of failure from both business and operational perspectives. The findings also point out that many of the agency staff who know and support these systems are retiring or nearing retirement age.

Phase I findings justify moving forward with Phase II of this study, which is referred to as a *Blueprint for Selecting an Improvement Approach*. The purpose of this next phase is to identify viable options for implementing a comprehensive, fully integrated, and responsive business systems infrastructure for the State of North Carolina. This phase will kick-off within the next week with the issuance of a Scope Statement. It is expected to be completed by late summer 2003.

The Executive Summary of Phase I, the detail report and all supporting schedules are found at http://www.osc.state.nc.us/Business_Systems_Infrastructure_Project.html. Please feel free to contact us if you have any questions.

MAILING ADDRESS
1410 Mail Service Center
Raleigh, NC 27699-1410

Telephone: (919) 981-5454
Fax Number: (919) 981-5567
State Courier: 56-50-10
Website: www.osc.state.nc.us/OSC/

LOCATION
3512 Bush Street
Raleigh, NC

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1 EXECUTIVE SUMMARY

1.1 Project Overview and Summary Findings

North Carolina State government is a large, multi-faceted organization with broad and diverse responsibilities. It must provide a variety of services to its citizens and be accountable for multiple and complex programs. The State is experiencing continuing challenges from budgetary constraints, public desires for expanded services, and taxpayer demands for more effective and efficient operations.

With an annual budget of $26 billion and over 265,000 employees, the State would be a Fortune 50 company, if it were a private organization. An absolute prerequisite for the State to meet the public's expectations for cost-effective operations and accountability for program performance is the superior management of its fiscal and personnel resources. Robust financial and human resource systems, employing modern technology and linked together electronically, are necessary for meeting this need.

The State's current core business systems are not up to this task. They are old, rely on outdated technology, do not communicate well with each other, and are difficult to change for new operational requirements. Moreover, they do not provide information needed for management decision making under today's much more demanding needs. They are at risk of failure due to old age, loss of vendor support, and are supported by a workforce that is rapidly reaching retirement age.

These concerns prompted the State to identify the need for further analysis of its current business systems and determine the feasibility of developing and implementing a new financial business infrastructure. The need for an infrastructure inventory and analysis was further reinforced by the Report of the Governor's Commission to Promote Government Efficiency and Savings on State Spending, which recommended that the State move this specific process forward in an effort to reduce duplication, redundancy and inefficiencies.

In the 2001 session of the General Assembly, legislation was enacted to authorize a State Business Infrastructure Study. Session Law 2001-491 directed the Office of the State Controller (OSC) to determine the feasibility of developing and implementing a new business infrastructure for the State. Session Law 2002-126 directed the Legislative Research Commission to conduct a State Human Resources and Retirement Systems Information Technology LRC Study. After some delay due to funding constraints, these two studies were combined under the direction of the OSC with assistance from the Office of State Budget and Management (OSBM), the Office of Information Technology Services (ITS), and the Office of State Personnel (OSP).

The systems included in the State Business Infrastructure Study support the following business functions: financial management, cash management, payroll, human resources, budget management, procurement, treasury, retirement, and revenue accounting. For these core systems, a range of data was required to be collected, specifically:

- Core System Purpose and Capabilities;
- Planned System Enhancements;
- System Interfaces;
- Costs Associated with Existing Systems Operation;
- Industry Best Practices;
- Functional Gaps / Operational Risks.

The findings listed below resulting from the State Business Infrastructure Study, Phase I - Inventory and Assessment project, further emphasize the State's current technology environment. These are consistent for most, if not, all of the systems reviewed. In addition, many of these universal findings also align very closely with the Governor's Commission to Promote Government Efficiency and Savings on State Spending. At a high level, these findings are as follows:

- The State's administrative systems do not easily and routinely communicate with each other (i.e., lack of integration) - This oftentimes results in duplicative system maintenance, operation, data entry functions, and databases.

- The core business systems were developed using what is now dated technology - They can not satisfy present and future needs for collecting, managing, and reporting information and meeting operating requirements for self-service features. They are at risk of failure due to systems that are in danger of losing vendor support. Also, the workforce maintaining them is reaching retirement age.

- At the present time, the State does not have a documented core business systems enterprise (statewide) strategy – Agencies continue to develop core business solutions in lieu of an approach that is coordinated and planned from a statewide perspective. While each individual application accomplishes specific work tasks and processes, the most important requirement is the exchange of information among the State's systems, and the ability to obtain comprehensive reporting and analysis. Without a master plan that prescribes how these core systems will evolve, a comprehensive and integrated financial and human resource system will not be realized.

- A general lack of employee, employer or customer self-service exists within today's business systems infrastructure – As a result, information from the systems is difficult to obtain and often late. More important, extra costs are incurred due to the additional staffing required to input data, and this is often the same data to multiple systems.

- The current business systems and processes available to support business functionality and management fail to meet industry best practices or efficient processing standards - The State currently lacks the ability to gather consistent, consolidated statewide information in a timely manner, resulting in information not available when and in the manner needed (and many times not available at all).

- The inability of the core systems to meet agency business requirements results in the development and ongoing maintenance for a host of agency-based systems – While it was noted that the core business systems provide much of the functionality that is required by the State's central control agencies, there is a lack of functionality required by the State's operating agencies. As the agency business requirements continue to be unmet by the core systems, many individual agencies have been and will be forced to implement agency specific solutions resulting in redundant data stores, redundant data entry, and redundant maintenance and operations costs.

- The current systems are generally paper based and signature driven and do not provide automated workflow, which would route documents electronically for review and approval - This requires users to circulate paper and obtain written approvals often resulting in needless delays and inefficiencies.

Unless the State steps forward and addresses the need for a new enterprise business solution from a statewide perspective, the efficiencies and costs savings that can be realized from a system enterprise approach will never be realized. While this report provides an inventory of the core business systems and the related agency business systems and an assessment of the current status of each of the core systems, it is clear that the State should move forward with Phase 2 of the project. Phase 2, which will include developing a Blueprint for Selecting an Improvement Approach, is a necessary next step to determine viable options, approach, and timeframe for implementing an integrated enterprise business infrastructure solution.

1.2 Project Approach

In addition to the core business systems infrastructure review, agency program and systems staff were also interviewed / invited to provide information regarding their interfaces to the State's core business systems. The interviewees were chosen because of either their leadership roles in support of the current core systems, or because they represented a cross section of current or future end users. The interviewees were asked to comment on their understanding of the current system environment. They were also asked to comment on the system's viability, functional/business requirements that are not being met, the risks of keeping the current set of software/hardware solutions, and opinions on the various options for the future. A list of interviewees by role and agency is provided in Appendix F, Interviewee List. The inventory and assessment effort was scheduled to be completed over a nine-week timeframe. Given the short duration of the project, a mix of in person interviews, telephone, and electronic survey mechanisms were utilized to gather, validate, and document the required information from subject matter experts across the many departments and agencies impacted.

The current core system functionality and technology were compared to Public Sector "best practices". Industry best practices were gathered from State and Federal entities that have successfully transformed or are in the process of transforming their business systems infrastructure with information technology solutions that have taken advantage of economies of scale, reduced the cost of doing business, and incorporated e-Commerce initiatives. The results of this comparison were used to identify business and technical "gaps" in current core systems capabilities. Finally the team also addressed the continued viability of each of the core systems. This Executive Summary provides an overall assessment for core systems. Each of the subsequent sections of this report provides a more detailed assessment for each of the core systems that were reviewed.

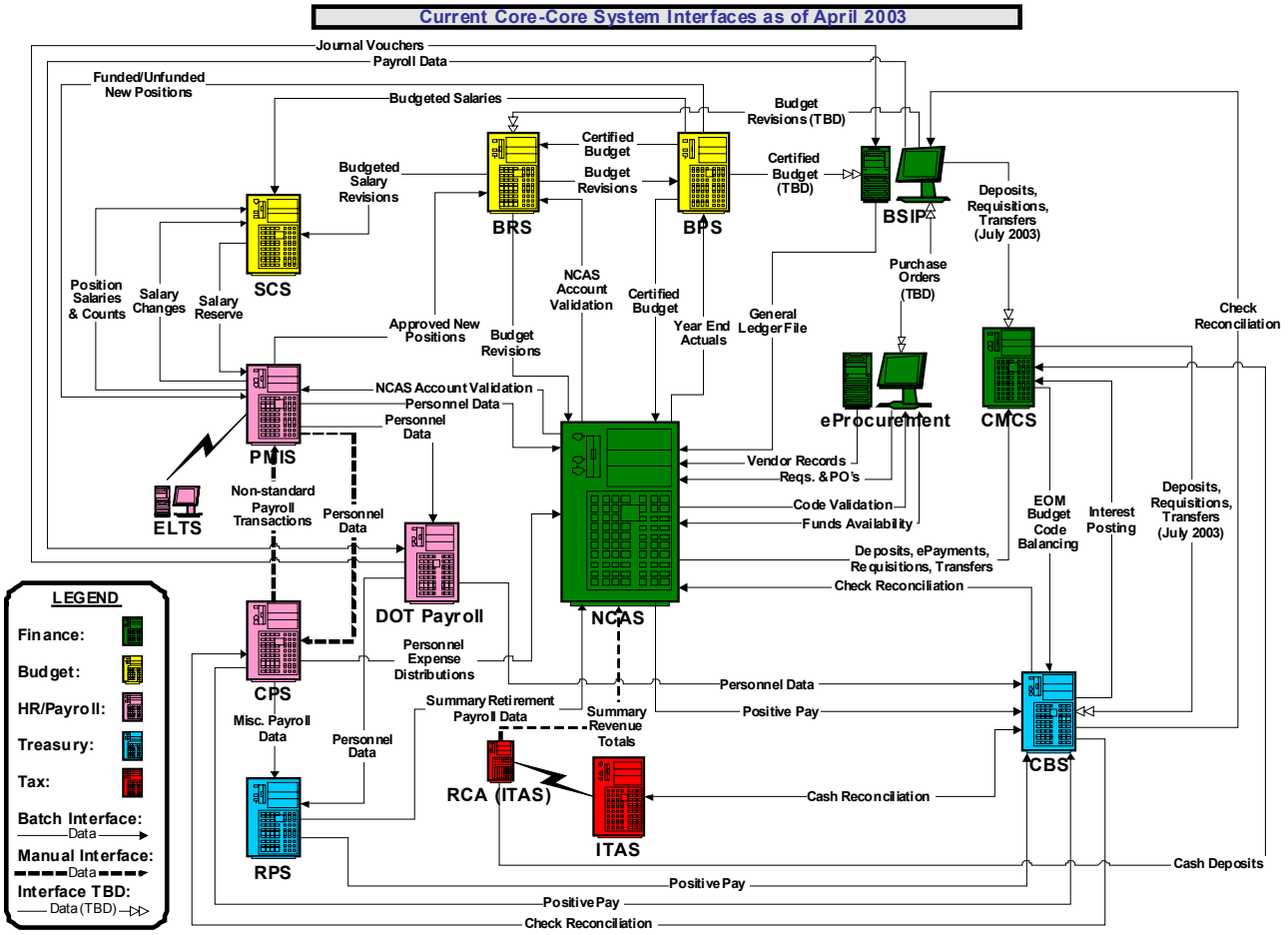
Project progress was monitored and reported weekly to the Project Steering Committee. The State Controller, State Budget Director, State Personnel Director and State CIO led this committee. This document represents the data gathered, validated, and analyzed by the project team and achieves the Phase I goal of delivering a high-level inventory and assessment of the State's core business systems.

The goal of this project is to conduct an inventory of the core business systems and the related agency business systems. The core business systems included three systems DOT BSIP, Core Banking, and Retirement Payroll where the nature of the reviews was limited because the systems are in various stages of being replaced. The core systems also include e-Procurement. The scope of the e-Procurement review was also limited because of pending implementation issues.

The analysis in this document provides an "as-is" assessment together with a comparison to industry best practices, and highlights functional and technical "gaps" in the existing infrastructure that will need to be bridged in order to deliver the most effective future infrastructure model. The output of this phase will be utilized to support the next phase of the State's efforts to advance government solutions and gain operational efficiencies, specifically to determine and document viable options for implementing the most appropriate financial business infrastructure for the State of North Carolina, one that includes integrated operations for business functions of state government.

1.3 Current System Environment

The State's core business systems are made up of disparate applications that are linked through a series of batch interfaces, require redundant manual data entry, and can not easily communicate with each other. Because these systems are not integrated, multiple versions of the same data are stored throughout these systems. For example, the same vendor master data is stored in three different systems. In addition, the central chart of accounts data is maintained in more than five systems. The inventory of the State's existing core business infrastructure is depicted at a high-level in the following diagram:



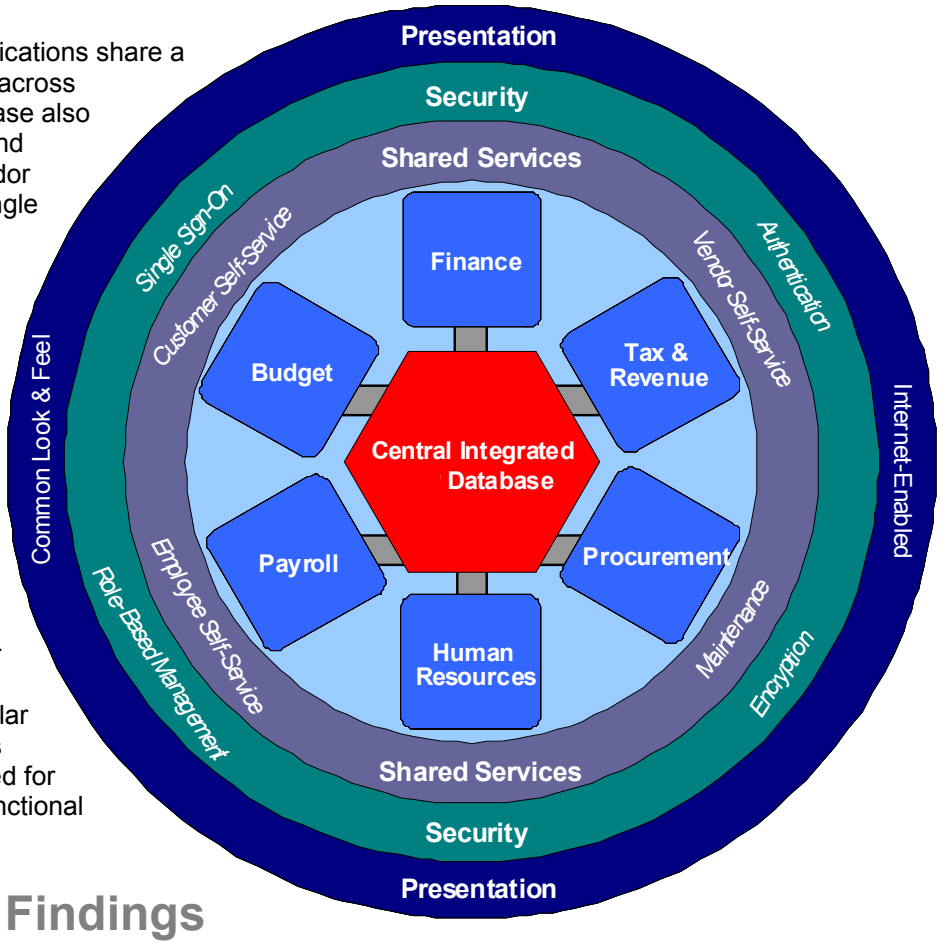
LEGEND OF ACRONYMS:

BPS ----------Budget Preparation System	ELTS---------Employee Leave Tracking System
BRS ----------Budget Revision System	ITAS----------Integrated Tax Administration System
BSIP ---------Business Systems Improvement Project (DOT)	NCAS --------North Carolina Accounting System
CBS ----------Core Banking System	PMIS ---------Personnel Management Info. System
CMCS -------Cash Management Control System	RCA ----------Revenue Collection & Analysis System
CPS ----------Central Payroll System	RPS ----------Retiree Payroll System
DOT ----------Dept. of Transportation	SCS ----------Salary Control System

This diagram highlights the State's current reliance on extensive (and costly) interfaces – both manual and electronic – that are required to achieve the current level of data sharing and operating efficiencies (e.g., reduced data entry, etc.) seen in these core business systems today. It is widely acknowledged that a quantum leap in efficiencies could be achieved through a reduction in interfaces and an increased reliance on *integration* as well as operational efficiencies achieved through shared technology services. Industry best practices for core business systems infrastructure bear this out.

The following diagram depicts a business infrastructure that relies on *integration* and shared services in order to simplify the maintenance and operation of a state's core business systems and at the same time improve the level of service delivered to internal and external customers:

Best Practice Integrated Enterprise Solution



In this diagram all of the core system applications share a single database. This facilitates reporting across functions and agencies. The single database also eliminates the need for data exchanges and redundant data storage (e.g. a single vendor file rather than multiple vendor files). A single integrated database also eliminates redundant data entry. A transaction is entered once and all of the appropriate tables and records are updated. Redundant data entry not only increases the level of effort required to enter data; it also increases the likelihood of data entry errors.

Another benefit of the enterprise wide model is the use of shared services. The self-service capabilities are shared across all of the applications. This allows the same maintenance function to support all applications. The security layer supports single sign on for all applications and the presentation layer provides a similar look and feel across the applications. This serves to reduce the training effort required for employees who transfer from one core functional area to another.

1.4 System Specific Findings

The following section highlights some of the more important findings specific to the individual business systems reviewed:

- The new core systems that are being developed are required to comply with the State's IT strategy. These systems employ technologies that support statewide open architecture standards to facilitate data sharing among the core systems. It should be noted however, that the actual integration of these systems with the other core systems is dependent on the other core systems being migrated to open system architecture technologies as well.

- The functionality provided by the Central Payroll System (CPS) and Personnel Management Information System (PMIS) does not address all of the agency level HR/Payroll business requirements. As a result a number of agency based HR/Payroll systems have been developed. At the present time, the State of North Carolina operates thirteen payroll systems that interface to a single statewide Personnel Management Information System. In parallel with these statewide systems, each agency has also developed their own stand-alone software solutions that support HR business functions that are not available on the PMIS or Central Payroll systems.

- The State does not have a statewide qualifications and competency catalogue, which would allow for competency based HR management processes. This process allows for the identification of standard definitions of skills, knowledge, and abilities and the various proficiency levels within them. These competencies can then be matched to employee, jobs, position, and location records. This facilitates

performance management, succession planning, recruitment, job and position classification, and training.

- Currently the only employee self service capability is Leave Tracking for employees in the agencies that use the Statewide Leave Tracking software. Best practice in HR/Payroll administration is to create self-service portals in all areas where the employee is the source of the information. This allows employees to maintain their own data, while significantly reducing the administrative work of the HR and Payroll staff. This allows employees to maintain their own HR, benefit, payroll information.

- Non-integrated stand-alone time and attendance/employee leave tracking systems are being used by numerous agencies. These applications do not automatically update payroll records. Best practice is for a single system solution for leave tracking that would be integrated with time collection and evaluation, payroll, and employee self service.

- The current budget systems do not provide version control that would allow agencies to develop different versions of their budget requests. If a central budget system does not provide the flexibility to allow each agency to secure versions of its own budgets, it is safe to assume that the agencies have developed budget preparation systems of their own.

- The current systems are not able to perform position control budgeting. While the budget systems provide a link to PMIS, the capability to accurately forecast salary budgets for positions is not available. Typically a budget position control capability allows the personal services budget to be developed from position and salary data stored in the integrated database.

- At the present time capital budgeting is done outside of the budget systems because the budget systems do not have the capability to support capital budgets. The budget preparation system must have the ability to project and budget revenue and expense data beyond the budget period. It is also necessary for the budget preparation system to be able to capture actual revenue and expenditure data on an inception-to-date basis to adjust the capital budget as needed.

- The NCAS does not have a specific grants management module. While procedures have been developed to help agencies track their grants by using the agency definable segments of the NCAS chart of accounts, it is not possible to do funds checking by grant. Grants can be reported by agency but there is no state level grant reporting available. NCAS has similar issues with project accounting. There is no separate project accounting module and the agencies in many cases do their project accounting outside of NCAS.

- Cost allocation is performed by the agencies outside of the NCAS system. Cost allocation functionality is not provided by the Geac package. As a result, NCAS is not able to support the agencies' cost allocation requirements. This presents issues concerning the ability to allocate direct costs by funding source and indirect costs to grants and projects. This information is essential to support grant claims and drawdowns.

- The NCAS Geac accounts receivable module has limited functionality and is currently used only by DHHS Division of Medical Assistance, the Office of Information Technology services, and the Department of Public Instruction's Textbook Warehouse. As a result, numerous agency accounts receivable subsystems are used to support the State's receivable activity along with multiple agency specific billing systems. The lack of a central accounts receivable system makes it difficult to develop statewide accounts receivable data. Further, the lack of statewide accounts receivable data hinders collection efforts and makes it difficult to develop a debt offset process.

- Although enhancements are planned ITAS currently lacks some functionality to support effective revenue collection and tax discovery. Today, best practice state, provincial and federal revenue administration agencies have enhanced their collection activities through a variety of technology, tools and techniques. In particular, they have used automated workflow and case management functionality to improve overall collection effectiveness. They use systems to identify delinquent accounts, automatically send out notices, and track taxpayer receivable information accurately and

efficiently, including payment agreements made with the taxpayer and any legal action taken, such as liens or garnishments.

- Similarly, best practice revenue organizations also utilize a variety of system tools and methods to select the best candidates for audit and for discovery of non-compliant taxpayers such as non-filers and under reporters, i.e. taxpayers with the highest likely revenue and collection yield. Identification of delinquent taxpayers is done via matching techniques. As examples, individual state non-filers are identified through a match with the IRS W-2 information or through information obtained from the DMV; while business non-filers may be identified through business registration at the Secretary of State and other information available from outside sources. DOR does have automated processes that match IRS data to ITAS, but does not have automated matches with the DMV or the Secretary of State.

1.5 System Operating Costs

Included in the table below is an estimate of the annual operation and maintenance costs for the core systems excluding the three systems in various stages of replacement and the recently implemented e-Procurement system. A number of costs are not included in the operations costs. Any costs associated with the agency's use of systems that duplicate or provide similar functionality are not included. The study identified a majority of these agency systems but did not collect any agency related costs. Infrastructure and capital costs like PCs, printers, and imaging equipment, in addition to data processing supplies and miscellaneous expenses were generally not captured. Lastly, FTE costs were captured only for personnel directly responsible for supporting the systems. FTEs associated with the use of the system (e.g. data entry, system inquiry, manual processing costs in data preparation, etc.) are not generally captured.

The next phase of this project, will examine the costs of alternate business solutions. The estimated costs below are not meant to represent the costs necessary to operate an integrated enterprise wide solution.

Summary of Core Agency Annual Maintenance and Operations Costs

	FTE Costs		Non - FTE Costs				
Core System	**Staffing - State Employees**	**Staffing - Contractors**	**Maintenance Fees / Licensing / HW & SW**	**ITS Charges**	**Training**	**Other Misc. Costs**	**Total Cost by System**
CMCS	$206,824	$23,438	$0	$24,295	$0	$89	$254,646
NCAS	$2,659,497	$504,955	$384,640	$2,409,397	$12,811	$15,475	$5,986,775
CPS	$370,997	$285,270	$0	$244,220	$990	$4,649	$906,126
DOT Payroll	$570,737	$180,000	$0	$90,000	Unknown	$5,000	$845,737
PMIS/ELTS *	$679,557	$0	$10,500	$675,000	$1,000	$0	$1,366,057
ITAS	$2,214,007	$1,576,671	$227,470	$6,407,465	$131	$238,252	$10,663,996
BPS/BRS/SCS *	$178,715	$0	$11,000	$116,500	$0	Unknown	$306,215
TOTALS	$6,880,334	$2,570,334	$633,610	$9,966,877	$14,932	$263,465	$20,329,552

* - The costs for these systems have been combined reflecting the maintenance and operations being performed by the same organizations and staff.

1.6 Conclusion

The core administrative systems of the State of North Carolina are largely mainframe legacy systems that employ hierarchical databases or indexed flat files to store data. The systems are not integrated. In some cases data is exchanged between systems through a series of batch interfaces. In other cases, the same data is manually entered into more than one system. The lack of integration often requires that the same data be entered and stored in more than one system. For example a vendor file and a valid accounting code file must be stored in both NCAS and e-Procurement. Also the current approach for BSIP is to manually enter into e-Procurement, purchase orders that have already been created in BSIP.

The lack of system integration combined with dated technology makes it very difficult for managers to generate meaningful reports. Systems of the generation represented by the State's core business systems were designed primarily to process large volumes of transactions. These systems generally do very well with editing, posting transactions, and producing reports of the data captured. However, because of the way the data is stored, it is labor intensive and costly to develop meaningful management reports. In many cases, the data for reporting is only available at a highly summarized level, because the detail data is only available in agency subsystems. This presents challenges in developing enterprise wide reports.

While the core business systems provide much of the functionality that is required by the State's central control agencies, they lack some of the functionality required by the State's operating agencies. Although NCAS is functionally rich in many areas, it does not provide sufficient functionality to support the agencies' grant, project and accounts receivable accounting requirements. In the HR function, the Employee Leave Tracking System only provides sufficient functionality for use by eight State agencies. As a result, agencies have developed their own systems to provide the functionality necessary to meet their business requirements. These agency systems range in size and complexity from PC spreadsheets to "State of the Art" COTS packages (e.g. BSIP).

While these systems provide the agencies with the functionality they require, it is not without cost. Costs include the cost to develop and implement these systems, the cost to operate and maintain these systems, and the cost to manage and reconcile the data in these systems to the data in the core systems. In the next phase of this project, the issue concerning the cost to operate multiple systems should be addressed (e.g. Is it more cost effective to operate ten agency financial systems to support grant accounting, or is it more cost effective to provide grant accounting capability in the central financial system?).

Many of the core business systems have been in use for more than twenty years. These systems have changed over time as a result of software modifications and system enhancements. Typically these modifications and enhancements are not well documented. Also the knowledge required to support and maintain these systems resides with the individuals who are rapidly approaching retirement age. As the individuals retire or otherwise move on, ongoing support of these systems will be problematic.

The fact that the core systems were developed using what is now dated technology, makes it difficult to find replacement staff with the needed skill sets. Many of the technologies that are currently supporting the core systems are no longer taught in school. Recent graduates that want to begin their information technology careers are not willing to learn the dated technologies because they feel that it diminishes their skills and reduces their marketability.

As these core systems continue to age and as the resources that support them continue to dwindle, the risk of a major system failure continues to increase. As the agency business requirements continue to be unmet by the core systems, new agency systems will continue to be developed resulting in redundant data stores, redundant data entry, and redundant maintenance and operations costs.

Because some agencies found themselves unable to support their obsolete and often fragmented systems, several have initiated projects to replace their legacy solutions. To minimize the long-term effects to a future business infrastructure enterprise solution, it is vital to finalize and establish statewide enforcement mechanisms. This effort will help to minimize any additional system fragmentation and silo development. This need has been recognized by the State and as part of the statewide Information Technology Strategy, a focus

is on the use of true enterprise solutions that use common technical service and shared technical infrastructure.

While this report provides an inventory of the core business systems and the related agency business systems and an assessment of the current status of each of the core systems, it is clear that the State should move forward with Phase 2 of the project (Develop a Blueprint for Selecting Improvement Approach) to determine viable options for implementing an integrated financial business infrastructure.

The remainder of this report provides a detailed discussion of Core System Purpose and Capabilities, Planned System Enhancements, System Interfaces, Cost Associated with Existing Systems Operation, Industry Best Practices, and Functional Gaps and Operational Risks for each of the core business systems.

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